

# Protecting Your Watershed

Tips for Small Acreages in Northwest Oregon

## Discovering a Watershed

What is a watershed? Wherever you go, there you are, in a watershed. A watershed is simply all the land area that drains to a specific point. Browse a map and you can find your watershed by finding the closest stream. Trace up the stream to its furthest point upland and you reach the headwaters; trace down and you reach the mouth at a larger stream, a lake, or the Pacific Ocean. The surrounding ridgetops define the watershed boundaries.

And there you are. The land drains into tributaries and tributaries flow into the river. As the water flows downhill, it moves over the land or drains through the soil. Along the way, water picks up woody debris, leaves, and needles that provide the foundation of food and shelter for aquatic life in streams. Water can also carry motor oil, fertilizer, pesticides, and eroded soil. Small actions like driving the car, fertilizing pasture, or even walking the dog can inadvertently pollute the watershed you live in. As the tributaries flow into the river, so do the pollutants. It all adds up.

### Stewardship/ (stu-erd-ship)

1. A personal commitment to care for the land.
2. To sustain or enhance the land for enjoyment of future generations.

## Watershed Functions: How We Change Them

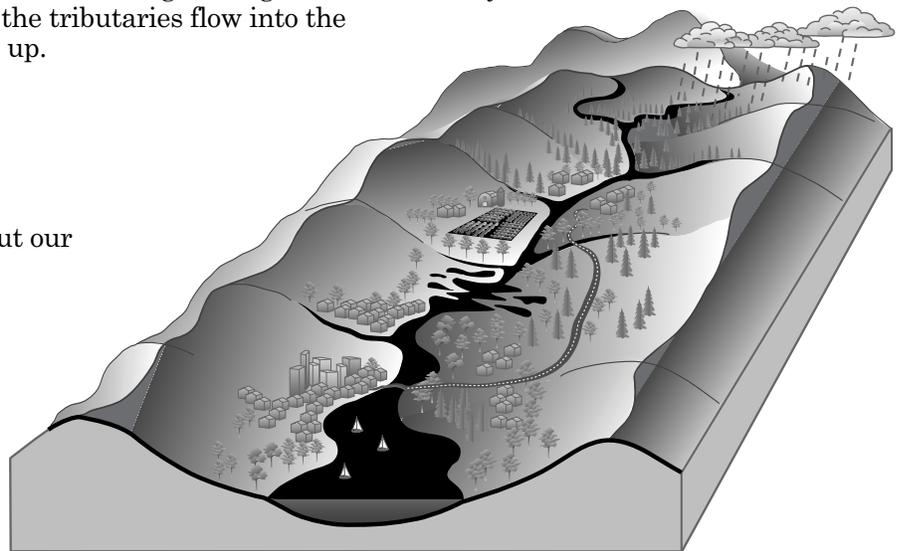
A watershed does three things, but our activities can disrupt its usual cycle:

### 1) Captures water.

Rain naturally enters the earth through soil, roots, and animal tunnels. When buildings, pavement, and other hard surfaces cover the ground, infiltration is hindered. Instead of being absorbed, water runs off into road ditches and into the nearest stream, causing severe stream erosion and floods.

### 2) Stores water.

After rain enters the soil, it fills the spaces between rocks and soil particles and becomes groundwater. Shallow groundwater enters the plant root zone where roots and soil organisms help to break down pollutants. Deep groundwater enters an area like a refrigerator: dark and cold, where little biological breakdown occurs. Septic system effluents, spilled motor oil, and excess fertilizers and pesticides can reach deep groundwater, polluting public and private wells. In Oregon, about 5 percent of private wells are polluted.



King County Dept. of Natural Resources

### 3) Releases water.

Springs, wetlands, and floodplains slowly release groundwater into lakes and streams. When these areas are filled or drained, water storage is reduced, and water runs quickly into the stream. Floods can be more frequent and damaging, while summer flows may be low or nonexistent.

Land use changes can disrupt the natural functions of a watershed. As a result, streams can erode and flood more often, water quality may decline, treatment costs may rise, and fish communities may collapse. Read on to identify problems in your watershed and find out what you can do to restore your watershed to better health...

*"I want to be able to see my feet."*

- Bernie Fowler, former Maryland senator, standing chest high in a river and talking about watershed goals

## How Healthy Is Your Stream?

More than 17,000 small acreage farms cover 298,000 acres in Oregon. Singly, one farm may cause little pollution. But added together, small acreages can significantly impact a watershed. A stream reflects your management of the land and water. Proper upland and instream measures can result in clean water for fish, drinking, and swimming. You can check the health of your stream by using your eyes and legs.

### Water color.

Clear water is often found during low flows. Muddy color occurs during high flows and when upstream activities send sediment downstream. Tea-colored water often comes from the brown tannin of decaying leaves. Colored sheen may indicate an oil spill.

### Foam.

Froth on a stream can be natural or human-caused. Natural foam has an earthy or fishy smell. Soap or detergent foam will have a perfume smell.

### Streambed sediment.

If gravel and cobbles are present, less than 25 percent of the gravel, cobble, and boulder spaces should be filled with sediment. A marginal to poor condition exists if more than 50 percent of the spaces are filled.

### Algae color.

Algae thrive on nutrients from commercial fertilizers, leaf waste, and manure. Light or dark green algae scattered in spots indicates a healthy stream. Matted or hairy algae mean poor stream quality. Brown algae point to sediment deposits. An algae bloom indicates excess nutrients.

### Streambank erosion.

Bare spots on streambanks may indicate an unhealthy stream. Wooded streambanks seldom erode, even in high floods. Steep banks, frequent tree fall, and more than 10 percent bank erosion along a stretch of stream may indicate erosion problems.

### Riffles.

Riffles occur when water runs over rocky or rough streambeds. A mix of riffles and quiet pools provide good fish habitat. The ideal habitat for many aquatic animals is a streambed with cobbles from 2 to 10 inches in diameter.

### Fish shelter.

Submerged logs and dead trees provide good fish habitat.

### Stream shade.

Trees overhanging more than 50 percent of the streambank provide good fish habitat. Less than 50 percent indicates fair to poor habitat.

### Stream temperature.

If you have a thermometer handy, measuring a temperature less than 50 degrees is good, 50 to 64 degrees is fair, and more than 64 degrees is poor. Warm water threatens salmon, trout, and steelhead. Temperature is an important water standard in Oregon.



USDA Natural Resources Conservation Service

Adapted from: *Save Our Streams*, Izaak Walton League; *Rangeland Watershed Management Program Stream / Watercourse Site Evaluation*, Oregon State University; *Vermont Streambank Conservation Manual*, Agency of Environmental Conservation.

## Pollutants at Large in Your Watershed

Point source pollution is pollution that comes from one source, such as a factory pipe outlet. Nonpoint source pollution is pollution that comes from many different sources, such as overfertilized lawns, trampled streambanks, or eroding pastures. Test your nonpoint knowledge:



Montana Stream Management Guide

Pollutant	Nonpoint Source	Impact
<b>Bacteria</b>	<ul style="list-style-type: none"> <li>▪ Septic tanks poorly sited or maintained.</li> <li>▪ Livestock and pet waste.</li> </ul>	<ul style="list-style-type: none"> <li>▪ Bacteria contaminate drinking water and swimming areas.</li> <li>▪ People eating contaminated fish/shellfish can contract hepatitis, stomach and intestinal problems, etc.</li> </ul>
<b>High Temperature,</b>	<ul style="list-style-type: none"> <li>▪ Straightened streams.</li> <li>▪ Dikes and dams.</li> </ul>	<ul style="list-style-type: none"> <li>▪ High temperature reduces oxygen.</li> <li>▪ Plant decay process uses up oxygen.</li> </ul>
<b>Low Dissolved Oxygen, Salinity</b>	<ul style="list-style-type: none"> <li>▪ Upland practices, e.g. stream shade removed, poor grazing practices, drained wetlands.</li> <li>▪ Plant litter, e.g., leaves and lawn trimmings dumped into ditches.</li> <li>▪ Irrigation leaching.</li> </ul>	<ul style="list-style-type: none"> <li>▪ Low oxygen and high salinity stunt reproduction, increase diseases, and kill fish.</li> </ul>
<b>Phosphorus, Nitrogen</b>	<ul style="list-style-type: none"> <li>▪ Crop fertilizers, livestock manure.</li> <li>▪ Landscape, lawn, and garden fertilizers.</li> <li>▪ Pet excrement.</li> <li>▪ Septic tanks poorly sited or maintained.</li> </ul>	<ul style="list-style-type: none"> <li>▪ Nutrients cause algae blooms that die and lower oxygen levels.</li> <li>▪ Noxious algae blooms and discolored water limit recreation.</li> <li>▪ Nitrates in groundwater kill livestock and sicken infants.</li> </ul>
<b>Sediment</b>	<ul style="list-style-type: none"> <li>▪ Erosion from poor grazing practices, tilling ground, logging roads.</li> <li>▪ Sheet, rill, and gully erosion.</li> <li>▪ Dredging, streambank erosion.</li> <li>▪ Bed scour from straightened streams.</li> <li>▪ Construction, land clearing.</li> <li>▪ Natural erosion.</li> </ul>	<ul style="list-style-type: none"> <li>▪ Sediment fills wetlands, destroys habitat, and smothers feeding and spawning areas.</li> <li>▪ Sediment carries nutrients.</li> <li>▪ Ports are dredged more often.</li> <li>▪ Cities have increased costs to filter drinking water.</li> </ul>
<b>Heavy Metals</b>	<ul style="list-style-type: none"> <li>▪ Motor fuel, exhaust.</li> <li>▪ Consumer products, e.g. batteries.</li> <li>▪ Construction materials.</li> <li>▪ Naturally present in soil.</li> </ul>	<ul style="list-style-type: none"> <li>▪ Heavy metals disrupt fish/ shellfish reproduction and can be passed up the food chain.</li> <li>▪ People eating contaminated fish/ shellfish can develop brain damage and fetal defects.</li> </ul>
<b>Car Pollutants</b>	<ul style="list-style-type: none"> <li>▪ Fuel, antifreeze, grease, brake-lining particles, and exhaust from cars.</li> <li>▪ Runoff from roads, parking lots, and driveways.</li> <li>▪ Dumping oil down stormdrains.</li> </ul>	<ul style="list-style-type: none"> <li>▪ Petroleum products accumulate in sediment, resist breakdown, and are toxic to fish in low amounts.</li> <li>▪ Potential carcinogen in people.</li> </ul>
<b>Human-made Chemicals</b>	<ul style="list-style-type: none"> <li>▪ Batteries, pesticides, household cleaners, and paints.</li> <li>▪ Poor storage, handling, and disposal of hazardous chemicals.</li> </ul>	<ul style="list-style-type: none"> <li>▪ Pesticides kill aquatic insects and reduce fish food supply.</li> <li>▪ Some pesticides cause bone defects and reproductive problems in fish.</li> <li>▪ Unknown effects in people.</li> </ul>

Adapted from *Guidance Specifying Measures for Sources of Nonpoint Pollution in Coastal Waters*, US Environmental Protection Agency.

## Your Property: What You Can Do

We are all powerful because every action matters in a watershed. Consider developing a conservation plan and using conservation measures to protect, care for, and enhance your property values and watershed health. To get started, browse the other fact sheets in this series which describe conservation tips for small acreage landowners.

### Small Acreage Stewardship Fact Sheets

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|--|---|
| 1) Protecting Your Watershed: Eastern Oregon         | 11) Managing Mud and Manure                                       |
| 2) Protecting Your Watershed: Northwestern Oregon    | 12) Fertilizing for Profit  |
| 3) Protecting Your Watershed: Southwestern Oregon    | 13) Protecting Your Land from Erosion                             |
| 4) Protecting Streambanks from Erosion               | 14) Planning and Managing Irrigation                              |
| 5) Installing a Streamside Buffer                    | 15) Managing a Sustainable Forest: Western Oregon                 |
| 6) Managing Pastures: Eastern Oregon                 | 16) Enhancing Wildlife Habitat                                    |
| 7) Managing Pastures: Western Oregon                 | 17) Planning and Installing a Pond                                |
| 8) Managing Pasture Weeds                            | 18) Before You Buy: Wells, Septic Systems, and a Healthy Homesite |
| 9) Providing Stockwater in Pastures and Near Streams | 19) After You Buy: Wells, Septic Systems, and a Healthy Homesite  |
| 10) Planning and Installing a Fence                  | 20) Filling Out a Project Permit                                  |



USDA Natural Resources Conservation Service

### Watershed Councils: The Way to Have a Say

Watershed councils offer a trustworthy link between government, community groups, businesses, and local residents. Councils solve natural resource issues in your watershed by a locally led effort rather than a top-down, regulatory one.

#### Watershed councils:

- Bring local people with diverse natural resource concerns to the same table.
- Develop watershed approaches that include natural resource concerns and community development priorities.
- Address hot topics like water quality and endangered species listings.
- Do not prevent change, but rather direct change towards informed choices.

Watershed councils are the cornerstone to the Oregon Plan for Salmon and Watersheds. Begun in 1995, the plan seeks a voluntary, locally led approach to address listed fish species concerns. For more information, contact the Governor's Watershed Enhancement Board at (503) 378-3589 for a watershed council near you.

*For Help*

- Soil and water conservation districts and the USDA Natural Resources Conservation Service may provide on-site technical advice on conservation measures. Look up your local office in the phone book's blue pages under federal government, Department of Agriculture.
- Oregon State University Extension Service offers publications, workshops, and over-the-phone assistance on conservation measures. Contact your local office by looking in the blue pages under state Government in the phone book.
- Governor's Watershed Enhancement Board (GWEB) has implementation funds available for watershed projects. Contact GWEB, soil and water conservation districts, watershed councils, and other state agencies for more information.

